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REVIEWS AND ABSTRACTS OF LITERATURE

Attention. W. B. PILLSBURY. New York: The Macmillan Co. 1908. Pp. 346.

This book is an extended exposition of the facts bearing on the nature and conditions of attention, its relation to other conscious processes, and of theories concerning it. The intention is not to present new experimental facts or to launch a novel theory but, rather, "to bring together in an orderly way the results of the different researches" and "to harmonize the known facts with one another" (preface). It is, therefore, in no sense pioneer work, but a survey of fields already traveled.

Attention as a conscious state is "an increased clearness and prominence of some one idea, sensation, or object, whether remembered or directly given from the external world, so that for the time it is made to constitute the most important feature of consciousness" (p. 308). The important term here is, of course, "clearness." Regarding its relation to intensity the author says that most authorities regard the effects of attention as different from those of an increased intensity of external stimulation. Structural differences between intensity and clearness it appears, however, difficult to exhibit. But they seem certainly to differ in their effects and, perhaps chiefly, in their conditions. Increase in intensity, for instance, makes discrimination more difficult, increase in clearness easier. Further, concerning conditions, "we might define the intensity as the degree of efficiency of a sensation in consciousness due to the energy expended upon the sense organ, attention as an increase in efficiency due to subjective conditions alone" (p. 9). This means, since clearness is the structural substitute for attention, that the quest for the peculiar conditions that determine the becoming clear of any conscious state must lie among subjective elements alone.

Among conditions, be it specially noted, motor activities do not figure (p. 27). Motor activities, which "succeed, or at most accompany, the attention" (p. 25) are: movements of adaptation of the sense organ; general correlated movements depending on the nature of the stimulus having, however, "no influence upon the efficiency of the attention," but being, nevertheless, "different enough to mark that particular act of the attention off from every other" (p. 18); overflow effects on the voluntary muscles not dependent on the nature of the stimulus and neither useful nor symbolic of the nature of attention (p. 20); and, finally, the movements of respiratory and circulatory processes. That none of these processes, although many of them serve as differential marks for any "particular act of the attention," are listed as conditions is a point to which shall recur later.

The real conditions of attention are classified as subjective and objective. Objective are those that "depend upon the nature of the external world at the time" (p. 27) and subjective, the resultants of "the earlier impressions that the individual has been subjected to, including, of course, the influences that have affected the ancestors and have given the individual in question his hereditary bent" (p. 28). Objective conditions favorable to attention include intensity (chiefly changes in intensity) of sensation, the summation effects of weak stimuli, a rapid rate of change in intensity, greater rather than less extensity of sensation for sight and touch and moderate duration. We must, I take it, reckon with these as conditions only in the sense that they favor the activity of the more weighty subjective conditions, for attention is "an increase in efficiency due to subjective conditions alone." One effective subjective condition is the idea or image in mind just previous to the act of attention; the others are more remote—the general mood of the moment, the general training of the individual, the social forces that have influenced him and his inherited characteristics—both racial and individual. Neither interest nor the feeling of activity is a proper condition of attention, since the former is either a mood accompanying all attention or a general name for the subjective conditions when attributed to the object, and the latter consists of movement sensations.

The pages thus explicitly devoted to an isolation of the subjective conditions of attention—admittedly those alone of vital significance—result, as it seems, in the general statement "that the conditions of the attention are as wide-spread as the conditions of consciousness itself," that, indeed, "every event that has at any time affected the individual in any way is at some time likely to determine in some degree the direction and efficiency of his attention," that, furthermore—to go beyond the individual—"through heredity and social environment everything that has helped to select for survival his ancestors or the race at any time will play some part, great or small, in deciding between the many stimuli offered on any occasion" (p. 52). This view of the conditions of attention receives in nearly every chapter such cumulative emphasis that it finally figures as perhaps the dominating *motif* of the book, although it does not, as may readily be seen, isolate any specific complex of processes as conditions of the clarifying and selective essence of attention apart from those of the rest of consciousness.

Under the caption, "The Effects of Attention in Consciousness," Pillsbury reviews investigations on the number of separate objects that can be attended to, on the duration of a single act of the attention, and on fluctuation. For a theory of fluctuation he is inclined to favor an hypothesis of central rather than peripheral processes, involving a fatigue of sensory cells, of reinforcing cells (corresponding, for instance, to the ideas that precede changes in the interpretation of ambiguous geometrical figures) and including, finally, the physiological rhythms originating in the circulatory and respiratory centers in the medulla.

We come next to methods of measuring the attention. Measures of attention are divided into three groups: direct, the measuring of accomplishments in some allotted task (discrimination of two points on the skin, reaction times, marking letters of one kind on a page, etc.); indirect, through fluctuation or through the mean variation in a series of measurements; and by the amount of stimulus necessary for distraction. None of these, however, appears to give a univocal test of attentive capacity. They are open chiefly to two objections—that some special facility acquired through training, rather than attention, is involved, and that the test may be in part dependent on other capacities—acuteness of the sense organ, retentiveness, etc. Certain tests are, therefore, suggested which, the author thinks, it would be well to try (p. 92). The difficulties mentioned, however, appear to be inherent, since attention "is a word that covers so many different processes that no single test will probably ever be devised that shall measure all the part processes satisfactorily" (p. 91).

The discussion up to this point (pp. 1–93) might be taken as one logical division of the book. It attempts, essentially, to analyze the nature and the conditions of attention. The next seven chapters (pp. 94–218)—more than a third of the book—are different, the analysis being, not of the attentive process itself, but, rather, of the rest of consciousness. The motives of this analysis are two: first, to state the author's own doctrine of ideas, perception, memory, will, reason, feeling, and the self (to each of which subjects a chapter is given), and, secondly, to canvass these various processes in an attempt to show just where and how attention functions in each one. It is really an examination of the field of psychology with the emphasis on the functional significance of attention. Since nothing new is added to the previous analysis of the attention process itself; since, further, the author reduces, in each chapter, the conditions that determine the particular mental capacity under discussion to the conditions that he had before enumerated as determining attention, we may pass over these chapters briefly. The conclusion, in any one chapter, may be substituted, with appropriate variations, for that of another. A few quotations will show this: "We find that they too (ideas) are subject to the control of the same factors which we found to be active in the control of sensorial attention"—the ideas in mind, the general attitude of the hour, etc. (p. 112). "The conditions of attention are at the same time the conditions of reason. One involves the other and can not be separated from it" (p. 182). "Taken together, the self and attention are so closely related as to be scarcely distinguishable. Conditions of attention and what we know as the self are for practical purposes identical" (p. 217).

The attempt in these chapters, it is clear, is to identify so far as possible the conditions of attention with those of other conscious processes. The identity can not, however—if the term "attention" is to retain significance—be complete, and it would have been more fruitful, the reviewer thinks, if the emphasis had been laid rather on the respects in which they are not identical. Such an emphasis might have helped towards an isolation of the differential conditions of attention, an isolation not attained in the discussion specifically devoted to conditions. As it is, one feels that little of importance is done in reiterating the identity of the conditions of all conscious processes. We are primarily interested in *differentiæ;* if investigation has not yet disengaged those of attention it would seem that the discussion of it, particularly of its functional relations, could be compassed in small space.

Following the excursus on the functions of the attention we find, in the closing chapters of the book, a return to what might be called the main theme—the analysis of the attention process itself—in a series of discussions of theory. Only two of these chapters ("Attention in Pathology and in Development" and "Applications to Education") form exceptions to this statement. At the outset of his theoretical discussions the author states and accepts the doctrine of psychophysical parallelism. A consideration of the structure and functions of the nervous system—following, so far as the cortex is concerned, Flechsig's view of the functions of the association areas—then leads him to conclude that "the anatomical seat of attention is apparently the frontal lobes" (p. 235). More important, however, than any attempt to assign to attention a local habitation, is the discussion of the physiological basis of the attention. To this chapter, since it reveals, at least to the reviewer, the author's fundamental position more clearly than any of the other discussions, our further remarks will be given. The other theoretical chapters are devoted to apperception in relation to attention, and to a history and critique of psychological theories.

The problem is, of course: What physiological processes are involved in the selecting and clarifying of one mental content at the expense of others? Such a process must be due, as many authors have shown, to reinforcement (or facilitation), to inhibition, or to both. The author includes both. An examination of certain phenomena of reinforcement and inhibition enables him to conclude that any cell, sensory or motor, will, by its mere activity, increase or decrease the activity, or tendency thereto, of any other cell, sensory or motor, however separated, however devious, apparently, the connection between them may be (pp. 240, 248). There is, namely, exhaustive reciprocal inhibition and reinforcement among all sensory and motor cells. One sees, thus, an ample mechanism in the nervous system for reinforcement and inhibition. The intimate character of either of these processes is not discussed; certain phenomena are exhibited, merely, which are interpreted as demonstrating the existence of the neural mechanism.

Any cell may, then, indifferently reinforce or inhibit any other cell. As for the *differential process,* that would account for the reinforcement or inhibition of any particular group of cells—for the clarifying or selecting of any particular conscious content—we find the following statements: "If every sensation has an influence upon every other sensation, it would only be natural to suppose that it would have a more marked influence upon the related sensations than upon those which are entirely foreign" (p. 250). "Earlier experiences," furthermore, "tend to organize the cells affected into groups, and so to determine the paths along which any reinforcement from a given stimulus will extend" (p. 252). These *organized groups* are "systems which are closely related on the nervous side to what Stout calls apperceptive systems on the mental side" and, "when any general or specific stimulus arouses one part of the system the other parts are thrown into a state of greater or less activity" (p. 255). It would appear, therefore, by applying these principles appropriately, that a perception or idea is reinforced by the presence of a related idea, a related mood, related past experience, related social experience, etc. In a word, the various subjective conditions of attention and, it may be added, of other conscious processes as well, are, thus, brought within the physiological theory.

Now of what constituent elements are these neural *systems* or *organizations,* of which the author speaks, composed? This is a most vital problem, for one's answer to it must inevitably determine one's main procedure in matters psychological. The author's presuppositions concerning the physiological nature of such organizations are unmistakable, both from explicit statement and from implicit emphasis. "Each system . . . is made up of a certain number of sensory cells together with the associatory cells of the frontal lobes" (p. 256). And, although at the beginning of the chapter reinforcement and inhibition were said also to obtain reciprocally between motor and motor and between sensory and motor cells, one finds, as the discussion progresses, that the interrelations of sensory cells, sensory areas, and sensory systems, figure more and more exclusively as the physiological basis of attention. Throughout the book, indeed, one is struck with the permeating emphasis on the sensory, or impression, aspect of experience. The reactive aspect is almost wholly neglected. Motor processes do not, as we have seen, figure as conditions of attention. Sensory impressions appear, furthermore, to persist *unaltered* throughout one's experience instead, for instance, of fusing and losing their identity in neural organizations that result in turn from unitary adaptive reactions (see, particularly, chapters VII. and VIII.). Everywhere one is impressed with the implicitly axiomatic attitude that experience consists only of impressions, revivals of impressions, and interrelations of impressions. This, one may think, might with fairness be called an example of the sensation bias in psychology.

Although, in short, the book sincerely aims to be a representative account of the various views that are held about attention, it shows no trace of the fundamental thought, however different the specific theories, underlying the work of Dewey, Baldwin, Münsterberg, W. MacDougall, or Judd. This fundamental thought is that not impression only, but reaction as well, must be included in any adequate account of consciousness; that not merely the afferent nervous system, but likewise the efferent, is involved, and is involved directly, not simply indirectly, through the motor *sensations* which the reactions arouse. Is it not probable, since an organism's chief concern is selective adaptation to an environment, that its reactions, or *the neural organizations that represent them,* are among the physiological determinants of its experience? Is it not possible, for instance, when eye movements appear to determine which of two competing colors in retinal rivalry shall persist in consciousness, that it is not a case of reinforcement or inhibition of one *sensory* center by another (p. 246), but an inhibition of one adaptive response by another? that, in general, so-called sensory reinforcement or inhibition is between reactions (or the totality of cortical organizations underlying them) and not between sensory organizations direct? It seems, further, quite appropriate to think, if an "object" is chiefly determined in consciousness by the use to which it is put (p. 66), that such "use" means one's selective system of reactions towards it, and that, when the *total* nervous organization corresponding to such reactions is aroused, we have a perception or an image of the object. This implies, of course, that no mere organization of sensory systems is adequate. Is it not, finally, a suggestive view which regards our discriminative reactions on our environment as the *selective* mechanism in experience and that it is the rearousal of cortical organizations at the basis of these reactions, rather than sensory organizations merely, that determines whether or no an object shall engage attention, whether or no, consequently, it shall become "clear" in consciousness? According to such a view the author's subjective conditions of attention (idea in mind, mood of the moment, whole past experience, etc.) would reduce to systems of individual selective habits of reaction, or corresponding mental attitudes, each with its correlate of definitely organized cortical processes.

These few suggestions are meant merely to remind any who needs reminding that the motor interpretation in psychology is still active; they are also symptomatic of the lively surprise that many have felt on finding in the present work, which sincerely, and in certain directions successfully, seeks to give an adequate résumé of representative facts and theories, no indication that the force of the underlying thought of a growing group of workers had been at all felt.

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Social Organization: A Study of the Larger Mind. CHARLES HORTON COOLEY. New York: Charles Scribner's Sons. 1909. Pp. xvii + 426.

Social psychology, like its cognate sister sociology, is still in a formative state. It is, nevertheless, works of the merit of Professor Cooley's "Social Organization" that will hasten its recognition as one of the accepted psychological disciplines.

In a previous book on "Human Nature and Social Order" Professor Cooley presented society as it exists in the social nature of man; in the present volume, on the other hand, he conceives life as one human whole, and approaches it from the mental rather than from the material side. "If we cut it up," he says in his preface, "it dies in the process; and so I conceive that the various branches of research that deal with this whole are properly distinguished by change in the point of sight rather than by any division in the thing seen." Hence, the view-point of the author in the book before us is focused on the enlargement and the diversification of intercourse.

Mind, as defined by Professor Cooley, is an organic whole made up of cooperating individualities, in somewhat the same way that the music of an orchestra is made up of divergent but related sounds; so, in the study of the social mind, he fixes his attention on the larger relations of mental experience.

The unity of the social mind he holds consists not in agreement, but in organization, "in the fact of reciprocal influence or causation among